

#### Era University, Lucknow Course Outline

Name of the	BRIT			Year/ Semester:	3 <sup>rd</sup>							
Program	Cl' · · · · · ·	C	DDT201	Т	701							
Course Name	Clinical Radiography	Course Code:	BRT301	Type: Semester	Theory							
Name	Positioning-I	Coue.										
Credits	05			<b>Total Sessions Hours:</b>	40							
Evaluation	Internal	30		End Term Exam:	70							
Spread	Continuous											
	Assessment:											
Type of Course	C Compulsory	Core	,	C Creative	C Life Skill							
Course	This course is des	igned to	provide th	e students the basic kno	wledge							
Objectives	Radiography. At the end of the course, the student should be able to:											
Course Outco attributes: Course Outcome (CO)	boo the 2) Elu 3) De	dy parts, no body and acidate the scribe the p	ormal funct their intera radiologica patient resp	grapher and positioning of vioning of various organ systems.  It aspects of normal growth onse and adaptations to environmental pletion, learners will developed.	and development.							
CO1	Explain how to take lower limb.	good qual	ity images	with as low as radiation dos	se in upper limb and							
CO2	Enumerate immob positioning devices.	ilization	technique	and immobilization de	evices. Use							
CO3	Work in clinical prac	tice and kr	now about	patient care								
CO4												
	Able to know and po	erform den	tal radiogra	aphy								
CO5	Able to know abdom	inal radiog	graphy.									
Pedagogy	Explanations by the Practical, Presentation		Group/Pai	r Work, Discussion, Assign	ment,							

Internal Evaluation Mode	Terminal Exam, Attendance, Project/Assignment, Class participation Bedside behavior or Interaction in class.	, Class pro	esentation,
Session Details	Торіс	Hours	Mapped CO
	Upper limb: Technique for hand, fingers, thumb, wrist joint carpal bones, forearm, elbow joint, radio ulnar joints and humerus supplementary techniques for the above.  E.g. Carpal tunnel view, ulnar groove, head of the radius, supracondylar projections. Lower limb: Technique for foot, toes, great toe, tarsal bones, calcaneum, ankle joint, lower leg, knee, patella & femur. Supplementary techniques: Stress view for tom ligaments, a. Subtalar joint and talo calcaneal joint. b. Inter condylar projection of the knee. c. Tibial tubercle. Length measurement technique.	5	CO1
	Shoulder girdle and thorax: Technique for shoulder joint, scapular, clavicle, acromio clavicular joints, sternum, ribs, sterno-clavicular joint. Supplementary projections and techniques a. Recurrent dislocation of shoulder. b. Traumatic dislocation of shoulder. c. Cervical ribs.		CO2

Unit 3	cervica thorace coccyx Scolios e. Uni demon regions bones,	o- lumb Supp sis. b. K on of strate s Techn sacra	e, cerv per spin dement typhosi spinal pecific ique for iliac	ico tho ne, lum ary tec s c. Spo graft. A pathole r whole joint, s	bo sactorial section in the section	atlanto- spine, t ral spin s to do isthesis tion of Pelvic Ilium, rsis pub	horacic e, sacr emonst d. Dis techni girdle ischium bis, hij	e spine um and rate: a c lesion ques to and hip n, pubic p joint	, d		5	C	O3
Unit 4	hips b. joints t survey metast Basic and m mastoi sinuses forame	Supplementary techniques- a. Congenital dislocation of hips b. Epiphysis of femur: c. Lateral projections for hip oints to show femoral head and neck relationship. Skeletal survey: Skeletal survey for metabolic bone disease, metastases, hormonal disorder, renal disorders. 8. Skull: Basic projections for cranium, facial bones, nasal bones and mandible. Technique for a. Petrous temporal for mastoids. Internal auditory canal Accessory nasal sinuses. b. Tempera - mandibular joint Orbits and optic foramen Zygomatic arches. c. Styloid process Pituitary fossa Jugular foramen.											04
Unit 5	occlusa orthop respira larynx	Dental Radiography: Technique for intra oral full mouth, occlusal projections, extra oral projections including orthopantomography, Supplementary techniques. Upper respiratory system: Technique for post nasal airways, larynx, trachea, thoracic inlet - Valsalva manoeuvre Phonation. Lungs and Mediastinum:										C05	
Unit 6  Technique for routine projections: Projections: Anteroposterior, obliques, lordotic, apical projection, use of penetrated posteroanterior projection Expiration technique Technique for pleural fluid levels and adhesions. Abdominal viscera: For plain film examination, Projection for acute abdomen patients. Technique to demonstrate:											O6		
CO-PO and	PSO M	apping											
CO POI	PO2	PO2         PO3         PO4         PO5         PO6         PO7         PO8         PSO1         PSO2         PSO3									PSO4	PSO5	PSO6
CO1 3 CO2 3	2	2	2	2 2	3	2 2	2	2	3	2 2	2	3 2	2
<b>CO3</b> 3	2	2	3	2	2	3	2	3	2	2	2	2	2
CO4 2	2	2	3	2	2	2	3	3	2	3	2	2	3
CO5 3 Strong contribut	3 ion-3	3 Avera	2 19e contri	bution-2,	2	ow contrib	ution-1	2	2	2	2	3	2
			ige comit	ounon-2 ,	L	<i>พพ</i> เขาแก่ไป							
Suggested I	readings	•											

Text- Books	1. Clark's Radio	graphy- Cla	ark Radiographic positioning- Garkal								
Reference Books 1. Clark's Radiography- Clark Radiographic positioning- Garkal  Recapitulation & Examination Pattern											
Recapitulatio	on & Examinat	ion Patter	n								
Internal Con	tinuous Assessı	ment:									
Component		Marks	Pattern								
Terminal Exa	m	12	<ol> <li>Contains a descriptive question of 4 marks</li> <li>Contains 4 MCQs</li> <li>Contains 2 short answer questions. Each question carries 2 marks</li> </ol>								
Attendance		4									
Project/Assign	nments	4									

Class participation or any other	4	
Class Presentation	4	
Attendance Bed Side Behavior or Interaction in Class	2	
Total Marks	30	



#### Era University, Lucknow Course Outline

Name of the	BRIT			Year/ Semester:	3 <sup>rd</sup>							
Program Course Name	Clinical Radiography Positioning-I	Course BRP301 Code:		Type: Semester	Practical							
Credits	03			<b>Total Sessions Hours:</b>	60							
Evaluation Spread	Internal Continuous Assessment:	30		End Term Exam:	70							
Type of Course	C Compulsory	Core		C Creative	C Life Skill							
Course Objectives	This course is designed to provide the students the basic knowledge  Radiography. At the end of the course, the student should be able to:											
	<ul> <li>4) Explain the role of radiographer and positioning of various body parts, normal functioning of various organ systems of the body and their interactions.</li> <li>5) Elucidate the radiological aspects of normal growth and development.</li> <li>6) Describe the patient response and adaptations to environmental stresses.</li> </ul>											
Course Outco	omes (CO): After the s	successful o	course comp	oletion, learners will develo	p following							
Course Outcome (CO)												
CO1	Explain how to take lower limb.	good qual	ity images v	vith as low as radiation dos	e in upper limb and							
CO2	Enumerate immobilization technique and immobilization devices. Use positioning devices.											
CO3	Work in clinical prac	ctice and kr	now about p	patient care								
CO4	Able to know and po	erform den	tal radiogra	phy								
CO5	Able to know abdom	ninal radiog	graphy.									
Pedagogy	Explanations by the Practical, Presentation		Group/Pair	Work, Discussion, Assign	ment,							

Internal Evaluation Mode	Terminal Exam, Attendance, Project/Assignment, Class participation Bedside behavior or Interaction in class.	, Class pr	esentation,
Session Details	Торіс	Hours	Mapped CO
Unit 1	1. All Views of Hip and Pelvis: Theatre procedure for Hip, Pinning and Reduction, Pelvis, Sacro-ilac Joint, Pelvis Bone, Acetabulum.	20	C01
Unit 2	1. All Views and techniques of Vertebral Column: Cervical Spine, Thoracic spine, Lumbar spine, Sacrum, Coccyx	20	C02,CO4

Unit 3					_		nen: Ga	stro-in	testinal	tract,		20	CO3,	CO5
		urınary	tract Sl	keletal	Survey	<b>7.</b>								
		I									l l		1	
CO-PO	O and I	PSO Ma	apping											
CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6
CO1	2	2	2	2	3	2	3	3	3	2	2	2	2	2
CO2	2	2	2	2	2	2	2	3	1	2	2	2	1	1
CO3	3	3	3 2	2	3 2	2 2	2 2	1	2	1 2	2	2	2	2 2
CO5	2	2	2	2	2	2	2	1	2	1	1	2	2	2
	ntribution			ge contril			ow contribi	ution-1		1	1			
				gecomin	Juiton-2	, г	on commo							
	Suggested Readings:  Fext- Books 1. Clark's Radiography- Clark Radiographic positioning- Garkal													
ICAL- I	DOOKS	1. Clair	k s Kaure	ograpny	- Clark	Kaulogi	apine pos	SILIOIIII	ig- Gark	aı				
Dofor		1 Clouds	a Dadio		Clouls I	) a di a ama	nhia nasi	tionino	Control	<u> </u>				
Refer		1.Clark	s Kadiog	grapny-	Clark I	Kadiogra	phic posi	tioning	- Garka	l				
Boo	oks													
Recap	itulatio	n & Ex	kamina	tion Pa	ttern									
Intern	al Con	tinuous	Assess	ment:										
Comp			71255055	Mar	ks P	attern								
										f 1 mar	lzo			
Terminal Exam 12 3. Contains a descriptive question of 4. Contains 4 MCQs							4 11141	KS						
	3. Contains 2 short answer questions. Each quest							action.	aarriaa '	2 mortes				
					د ا	. Contai	.118 2 8110	it ansv	ver que	suons.	Each qu	uestion	carries.	z marks
Attend	ance			4										
Proiect	t/Assign	nments		4										
- 55.00														

Class participation or any	4	
other		
Class Presentation	4	
Bed Side Behavior or	2	
Interaction in Class		
Total Marks	30	



#### Era University, Lucknow Course Outline

Name of the	BRIT			Year/ Semester:	3	rd						
Course Name	Contrast & Special Radiography Procedures	Course Code:	BRT303	Type: Semester	Theory							
Credits	0	3		<b>Total Sessions Hours:</b>	40							
Evaluation Spread	Internal Continuous Assessment:	30		End Term Exam:	70							
Type of Course	C Compulsory	Core		C Creative	0	Life Skill						
Course Objectives	This course is designed to provide the students the basic knowledge in systematic investigations with using contrast media and image intensifier.											
Course Outco	omes (CO): After the s	successful c	ourse comp	oletion, learners will develo	p followii	ng						
Course Outcome (CO)												
	_			ctions of contrast media. numbers of exposures ir	n each							
CO2	Demonstratethe posit	tioning and	technique	of the special studies.								
CO3	Explain the technique	ue of all GI	Tstudy acc	ording to investigation.								
CO4	Demonstrate surface anatomy.To be able to know the technique behind the radiography.											
Pedagogy	Explanations by the Instructor, Group/Pair Work, Discussion, Assignment, Practical, Presentations.											
Internal Evaluation Mode	Terminal Exam, Att Bedside behavior or			gnment, Class participation	, Class pro	esentation,						
Session Details		,	Горіс		Hours	Mapped CO						

Unit 1	Special radiographic procedures Responsibility of Radiographer during Radiological Procedures. Preparation of Patient for Different Procedures. Contrast Media - Positive and Negative, Ionic & Non - Ionic Adverse Reactions To Contrast Media and Patient Management Emergency Drugs in the Radiology Department Emergency Equipments In the Radiology Department Aseptic technique Indications, contraindications, basic techniques and relationship to other techniques of the following special procedures		CO1
Unit 2	Gastrointestinal Tract: Fluoroscopy, general considerations, responsibility of radiographers Barium swallow, pharynx and oesophagus Barium meal and follow through Hypotonic duodenography Small bowel enema Barium Enema routine projections for colon and rectum, colonic activators; double contrast studies; colostomy. Special techniques for specific disease to be examined Water soluble contrast media - eg. gastrograffin studies b. Salivary glands: Routine technique, procedure - sialography c.	5	CO2

Percut pancre	aneous atogra	s cholar phy • (F	ngiograj ERCP)	phy En Operati	doscopi ve chola	c retro ingiogi	grade cl aphy F	holangi		5	С	O3
Antegr mictur	rade atingcy		pyelog	raphy		Cysto	graphy		and	5	С	O4
Respir	atory	syste	aphy:	5	CO4							
Multiple radiography. Uses of soft tissue radiography. 1. High kV RadiographyGeneral principles Relation to patient dose Change in radiographic contrast. Scatter elimination; beam collimation; grid ratio. Speed and type of grid movement. Radiographic factor; application and uses. m. Localization of foreign bodies: General location principles. Ingested; inhaled; inserted; embedded foreign bodies. Foreign bodies in eye. Preparation of the area to be investigated. Appropriate projection for all Techniques to locate non-opaque foreign body.											CO4	
SO Ma	npping											
PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6
3	2	2	2	2	3	2	2	2	2	2	3	3
												2
2	2	2	3	2	3	2	2	3	2	2	3	2
-3,		ige contri	bution-2,	L	ow contrib	ution-1,						
adings: Clark's		ograph	y- Clar	·k/ Tex	t book	of radi	ology:	for resi	idents	and		
	Percuti pancre Opera  Urinar Anteg mictur punctu  Femal Respir Routin  Multip radiog	Percutaneous pancreatogra Operative ch  Urinary syst Antegrade micturating puncture  Female Respiratory Routine tech  Multiple radiography. Principles Radiographic collimation; movement. Lises. m. Lococation priembedded for preparation Appropriate non-opaque from the properties of	Percutaneous cholar pancreatography (R Operative cholangical Comparitive cholangical Comparitive cholangical Comparitive cholangical Comparitive Comparities (Comparities) (Preparation of the Comparities) (Preparation of the Compari	Percutaneous cholangiograp pancreatography (ERCP) Operative cholangiography  Urinary system: Intraven Antegrade pyelog micturatingcystouresthrography puncture  Female reproductive Respiratory system: Brography Routine technique and productive Respiratory system: Brography Position Routine technique and productive Respiratory system: Brography Routine technique and productive Respiratory system: Brography Routine technique and productive Respiratory system: Brogradiography Routine technique and productive Respiratory system: Brogradiography Routine Relation to principles Relation to principles Relation of radiographic contrast. Secollimation; grid ratio.  Multiple radiography Routine Relation to principles Relation to principles Relation of radiographic contrast. Secollimation; grid ratio.  Preparation of the arrangement of the arrangement of the properties of the productive Respiratory system: Brography Relation to principles Relation to principles Relation to productive Respiratory system: Brography Relation to principles Relation to principles Relation to productive Respiratory system: Brography Relation to productive Respira	Percutaneous cholangiography En pancreatography (ERCP) Operation (ERCP) Operation (Parative cholangiography (T - tulk operative cholangiography operation) Uses the second operation of the area to operat	Percutaneous cholangiography Endoscopi pancreatography (ERCP) Operative chola Operative cholangiography (T - tube Cholangiography Antegrade pyelography Urethrography puncture  Female reproductive system: Hy Respiratory system: Bronchography: An Routine technique and procedure.  Multiple radiography. Uses of radiography. 1. High kV Radiographic contrast. Scatter eliminate collimation; grid ratio. Speed and the movement. Radiographic factor; appliess. m. Localization of foreign bodiocation principles. Ingested; inhale embedded foreign bodies. Foreign bodiocation principles. Ingested; inhale embedded foreign bodies. Foreign bodion-opaque foreign body.  SO Mapping  PO2 PO3 PO4 PO5 PO6 PO7  3 2 2 2 2 3 3 2 2 2 2 2 2 3 3 2 3 3 3 3	Percutaneous cholangiography Endoscopic retropancreatography (ERCP) Operative cholangiography (T - tube Cholangiography (T	Percutaneous cholangiography Endoscopic retrograde of pancreatography (ERCP) Operative cholangiography Foperative cholangiography (T - tube Cholangiography Poperative cholangiography (T - tube Cholangiography)  Urinary system: Intravenous urography Retrograde Antegrade pyelography Cystography micturatingcystouresthrographyUrethrography (ascend puncture  Female reproductive system: Hysterosalpingography: Awareness. h. S. Routine technique and procedure.  Multiple radiography. Uses of soft tissue radiography. 1. High kV RadiographyGeneral principles Relation to patient dose Change in radiographic contrast. Scatter elimination; beam collimation; grid ratio. Speed and type of grid movement. Radiographic factor; application and rates. m. Localization of foreign bodies: General reproductive projection for all Techniques to locate and the properties of the area to be investigated. Appropriate projection for all Techniques to locate non-opaque foreign body.  SO Mapping  PO2 PO3 PO4 PO5 PO6 PO7 PO8 PSO1 PSO1 PSO1 PSO1 PSO1 PSO1 PSO1 PSO1	Percutaneous cholangiography Endoscopic retrograde cholangiography (ERCP) Operative cholangiography Post-Operative cholangiography (T - tube Cholangiography)  Urinary system: Intravenous urography Retrograde pyelog Antegrade pyelography Cystography micturatingcystouresthrographyUrethrography (ascending) puncture  Female reproductive system: Hysterosalpingography. Respiratory system: Bronchography: Awareness. h. Sinusography Respiratory system: Bronchography: Awareness. h. Sinusography. 1. High kV RadiographyGeneral principles Relation to patient dose Change in radiographic contrast. Scatter elimination; beam collimation; grid ratio. Speed and type of grid movement. Radiographic factor; application and uses. m. Localization of foreign bodies: General cocation principles. Ingested; inhaled; inserted; embedded foreign bodies. Foreign bodies in eye. Preparation of the area to be investigated. Appropriate projection for all Techniques to locate non-opaque foreign body.  SO Mapping  PO2 PO3 PO4 PO5 PO6 PO7 PO8 PSO1 PSO2 3 2 2 2 3 2 2 2 2 2 2 2 2 2 2 2 2 2 2	Urinary system: Intravenous urography Retrograde pyelography Antegrade pyelography Cystography and micturatingcystouresthrographyUrethrography (ascending) Renal puncture  Female reproductive system: Hysterosalpingography. Respiratory system: Bronchography: Awareness. h. Sinusography: Routine technique and procedure.  Multiple radiography. Uses of soft tissue radiography. 1. High kV RadiographyGeneral principles Relation to patient dose Change in radiographic contrast. Scatter elimination; beam collimation; grid ratio. Speed and type of grid movement. Radiographic factor; application and ratioses. m. Localization of foreign bodies: General reproductive in the area to be investigated. Appropriate projection for all Techniques to locate mon-opaque foreign body.  SO Mapping  PO2 PO3 PO4 PO5 PO6 PO7 PO8 PSO1 PSO2 PSO3 2 2 2 3 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	Percutaneous cholangiography Endoscopic retrograde cholangio-pancreatography (ERCP) Operative cholangiography Post-Operative cholangiography (T - tube Cholangiography Post-Operative cholangiography (T - tube Cholangiography)  Urinary system: Intravenous urography Retrograde pyelography Antegrade pyelography Cystography and micturatingcystouresthrographyUrethrography (ascending) Renal puncture  Female reproductive system: Hysterosalpingography. Respiratory system: Bronchography: Awareness. h. Sinusography: Routine technique and procedure.  Multiple radiography. Uses of soft tissue radiography. 1. High kV RadiographyGeneral principles Relation to patient dose Change in radiographic contrast. Scatter elimination; beam collimation; grid ratio. Speed and type of grid movement. Radiographic factor; application and asses. m. Localization of foreign bodies: General ocation principles. Ingested; inhaled; inserted; embedded foreign bodies. Foreign bodies in eye. Preparation of the area to be investigated. Appropriate projection for all Techniques to locate non-opaque foreign body.  SO Mapping  PO2 PO3 PO4 PO5 PO6 PO7 PO8 PSO1 PSO2 PSO3 PSO4 3 2 2 2 2 3 3 2 2 2 2 2 3 3 2 2 2 2 2	Percutaneous cholangiography Endoscopic retrograde cholangio-pancreatography (ERCP) Operative cholangiography Post-Operative cholangiography (T - tube Cholangiography)  Urinary system: Intravenous urography Retrograde pyelography Antegrade pyelography Cystography and micturatingcystouresthrographyUrethrography (ascending) Renal puncture  Female reproductive system: Hysterosalpingography.  Respiratory system: Bronchography: Awareness. h. Sinusography: Routine technique and procedure.  Multiple radiography. Uses of soft tissue radiography. 1. High kV RadiographyGeneral principles Relation to patient dose Change in radiographic contrast. Scatter elimination; beam collimation; grid ratio. Speed and type of grid movement. Radiographic factor; application and uses. m. Localization of foreign bodies: General ocation principles. Ingested; inhaled; inserted; embedded foreign bodies. Foreign bodies in eye. Pereparation of the area to be investigated. Appropriate projection for all Techniques to locate non-opaque foreign body.  SO Mapping  PO2 PO3 PO4 PO5 PO6 PO7 PO8 PSO1 PSO2 PSO3 PSO4 PSO5 3 2 2 2 3 3 2 2 2 2 2 3 3 3 3 3 3 2 2 2 2 2 3 3 2 2 3 3 3 3 3 3 2 2 2 2 2 3 3 2 2 3 3 3 3 3 3 3 3 3 2 2 2 2 3 3 2 2 3

Internal Con	1. Radiographic positioning- Garkal 2. Radiology- Special investigation - champman  n & Examination Pattern  inuous Assessment:							
Component		Marks	Pattern					
Terminal Exam		12	<ul><li>5. Contains a descriptive question of 4 marks</li><li>6. Contains 4 MCQs</li><li>3. Contains 2 short answer questions. Each question carries 2 marks</li></ul>					
Attendance 4		4						
Project/Assign	nments	4						

Class participation or any	4	
other		

Class Presentation	4	
Bed Side Behavior or	2	
Interaction in Class		
Total Marks	30	



#### Era University, Lucknow Course Outline Effective From 2023-24

Name of the	BRIT			Year/ Semester:	3 <sup>rd</sup>					
Program			T							
Course	Contrast &	Course BRP303		Type: Semester	Practical					
Name	Special	Code:								
	Radiography									
G 11.	Procedures				(0)					
Credits	03			<b>Total Sessions Hours:</b>	60					
Evaluation	Internal	30		End Term Exam:	70					
Spread	Continuous									
	Assessment:									
Type of Course	C Compulsory	Core		C Creative	C Life Skill					
Course	TT1: 1 :	1.	1 1 1 1							
Liniectives	_	_		ents the basic knowledge in	systematic					
	investigations with us	sing contras	st media and	d image intensifier.						
Course Outco	omes (CO): After the s	successful c	course comp	oletion, learners will develo	p following					
attributes:										
Course										
Outcome										
(CO)										
CO1	Explain indication, co	ontraindicat	tion and rea	ctions of contrast media.						
	_			numbers of exposures in	n each					
	special investigation.			1						
	special investigation.									
CO2	Demonstrate the nos	itioning and	d technique	of the special studies.						
CO2	Demonstrate the posi-	moning and	ı tecilinque	of the special studies.						
CO3	Explain the technique	ie of all CI	T study acc	ording to investigation.						
	DAPIGITI THE LECTING	ac or an or	1 study acc	ording to investigation.						
CO4	Demonstrate surface	e anatoms	To be ab	ole to know the technique	e behind the					
204	radiography.	c anatomy	1.10 DE au	ore to know the techniqu	ic beilliu the					
Dodogogy		Instructor	Croup/Doir	Work, Discussion, Assign	mant					
Pedagogy	Practical, Presentation		Group/Pair	work, Discussion, Assign	ment,					
Internal			roject/Assic	gnment, Class participation	Class presentation					
Internal Evaluation	Bedside behavior or			giment, Ciass participation	, Ciass piesentation,					
Mode Mode	Dedside Deliavior Of	mulacion	i iii Ciass.							
Mione										

Session Details	Торіс	Hours	Mapped CO
Unit 1	1.Radiography in various positions for all the special radiological procedures, using contrast media	30	CO1
Unit 2	1. Identification of various films for all the special radiological procedures, using contrast media and related pathologies	30	CO2,CO3. CO4

CO-PO	) and I	PSO M	apping											
СО	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6
CO1	2	2	2	2	2	2	2	3	1	2	3	2	2	2
CO2	2	2	1	3	2	1	2	2	2	2	3	2	2	2
CO3	2	3	1	2	2	3	2	2	2	2	2	3	2	2
CO4	2	3	2	2	2	2	2	2	3	2	2	2	1	2
	Strong contribution-3, Average contribution-2, Low contribution-1,													
Suggested Readings:														
Text- I		Clark's	s Radio	graph	y- Claı	rk/ Tex	t book	of radi	ology	for res	idents	and		
	technicians													
Refer Boo			iographi	•			oh ommun o							
		Z. Kaul	iology- i	speciai i	mvesug	ation - (	champma	Ш						
Recapi	itulatio	n & Ex	kamina	tion Pa	ttern									
Intern	al Cont	tinuous	s Assess	sment:										
Compo	onent			Mar	ks P	attern								
Termin	7. Contains a descriptive question of 4 marks 8. Contains 4 MCQs 3. Contains 2 short answer questions. Each question carries 2 mark									2 marks				
Attend	ance			4							•			
Project	/Assigr	nments		4										

Class participation or any	4	
other		
Class Presentation	4	
Bed Side Behavior or	2	
Interaction in Class		
Total Marks	30	



#### Era University, Lucknow Course Outline

Name of the	BRIT			Year/ Semester:	31	rd
Program						
Course	Modern	Course	<b>BRT302</b>	Type: Semester	Theory	
Name	radiological	Code:				
	& imaging					
	Equipment					
	including					
	physics					
Credits	(	)3		<b>Total Sessions Hours:</b>	40	
Evaluation	Internal	30		End Term Exam:	70	
Spread	Continuous					
	Assessment:					
Type of	C Committees	Core		C Creative	(	Life Skill
Course	C Compulsory	© Core		Creative	<u> </u>	LIFE SKIII
Course	The purpose of this of	course is to	provide a	n understanding of physica	l concept	S
				pplications of mammogr		
				ould able to scanning		
	mammography,comp	•		<u> </u>		
Course Outco	omes (CO): After the	successful c	ourse comp	oletion, learners will develo	p followir	ıg
attributes:						
Course						
Outcome						
(CO)						
CO1	Perform the procedu	re of mamr	nography s	canning.		
	1			C		
CO2	Enumerate and able	to know the	e principle	computed radiography.		
CO3	Able to know and po	erform vasc	ular imagii	ng with PACS		
Pedagogy	Explanations by the	Instructor,	Group/Pair	Work, Discussion, Assign	ment,	
S 5.	Practical, Presentation		•			
Internal	Terminal Exam, Att	endance, Pi	roject/Assig	gnment, Class participation	, Class pro	esentation,
Evaluation	Bedside behavior or	Interaction	in class.		1	
Mode						
Session		,	Topic		Hours	Mapped
Details						CO

Unit 1	Mammography, History of mammography, Mammographic equipment, Mammographic radiation dose and exposureDedicated mammographic unit and its special features, Types of mammographRoutine Mammographic Positioning & Views with additional views and technical considerations, Wire localization in mammography.		CO1
Unit 2	Special equipment: Portable and mobile x-ray units, dental x-ray machine, skull table Generator, x-ray tubes; Accessories; Resolution; Quality control; Application and role in medicine., digital radiographic equipment, digital subtraction techniques. Tomography: Body section radiography, basic principle and equipment, multi section tomography, various types of tomographic movements, Dual energy x-ray absorptionometry (DEXA), stats can.	6	CO2

Uni	t 3	Comp	uted r		9	C	O3							
		equipment. Digital Radiography. Flat panel digital												
		fluoro	fluoroscopy and radiography system, Direct and											
		indired	ct dig	ital 1	adiogi	raphy	and	fluor	oscopy	1				
		system	ns. D	igital	radio	ograph	y and	Co	mputed	1				
		radiog	raphy	its	advai	ntages,	disadv	antag	e; and	1				
		applica	ations.			_								
Uni	t 4						oduction					8	C	O2
							radiogra nition of							
			grapiry, ommun					terms.	. 4. FICI	uie aici	nving			
					•	`	,							
		nd PSO			DO.	l no.c	DOS.	noo.	DCO1	DGO4	DGO2	DGO 4	L DOOF	DCO.
CO	<b>PO1</b> 3	PO2	PO3 2	PO4 2	PO5 2	PO6	PO7 2	PO8 2	PSO1 2	<b>PSO2</b> 2	<b>PSO3</b>	PSO4 2	PSO5	PSO6 2
1 CO 2	2	2	2	2	2	2	2	2	3	2	2	2	2	3
CO 3	2	2	3	2	2	2	3	3	2	2	2	3	2	3
Stron		bution-3,		Average co	ontributio	on-2,	Low co	l ntribution	n-1,					
		l Readi	ngs:											
Tex Boo		1. Clar	k's Radio	ography	- Clark/	Text bo	ook of rac	liology	for resi	dents an	d techni	cians-		
		2. S k	bhargav	a Radio	graphic	position	ing- Gar	kal						
) ]	efere nce Boo ks	. Clark's	s Radiog	raphy-	Clark/ T	Cext boo	k of radio	ology fo	or reside	ents and	technici	ans-		
Rec	apitul	ation &	Exam	inatior	Patte	rn								
Inte	ernal (	Continu	ious As	sessme	nt:									
Cor	npone	ent		Mar	ks P	attern								
Terminal Exam  12  9. Contains a descriptive question of 4 marks 10. Contains 4 MCQs 3. Contains 2 short answer questions. Each question carries 2									2 marks					
Atte	endanc	ee		4				T CALLS V	400					
Pro	ject/As	ssignme	ents	4										
	Tojeco i isolgimento													

Class participation or any other	4	
Class Presentation	4	
Bed Side Behavior or Interaction in Class	2	
Total Marks	30	



### Era University, Lucknow

Course Outline Effective From: 2023-24

Name of the	BRIT			Year/ Semester:	3	rd
Program			T			
Course	Modern			Type: Semester	Practical	
Name	radiological	Code:				
	& imaging					
	Equipment					
	including					
G 114	physics					0
Credits	03			Total Sessions Hours:		0
Evaluation	Internal	30		End Term Exam:	7	0
Spread	Continuous					
	Assessment:					
Type of Course	C Compulsory	Core		C Creative	0	Life Skill
	and underlying var	ious techn ohy and	ological a DSA. Sh	n understanding of physical pplications of mammogrould able to scanning DSA.	aphy an	d
Course Outco	omes (CO): After the	successful c	ourse comp	oletion, learners will develo	p followii	ıg
Course						
Outcome						
(CO)						
CO1	Perform the procedu	re of mami	nography s	canning.		
CO2	Enumerate and able	to know the	e principle	computed radiography.		
CO3	Able to know and po	erform vasc	ular imagii	ng with PACS		
Pedagogy	Practical, Presentation	ons.		Work, Discussion, Assign		
Internal				gnment, Class participation	, Class pr	esentation,
Evaluation Mode	Bedside behavior or	Interaction	in class.			
Session			Topic		Hours	Mapped
Details						CO

Unit 1	1. X-Ray tubes and accessories, general features.	15	CO1
Unit 2	Portable X-Ray Equipment.     Dental X-Ray unit.	15	CO2

Unit 3		1. In	nage int	ensifie	r, its fe	atures,	spot filı	n.				15	CO2,	CO3
			adiation			evices								
		3. Effects of kVand mAs.												
Unit 4		1. N	Iaintena	ance of	X-ray	equipm	ent and	access	ories.			15	C	O3
			1ammo		-									
			apping											
CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6
CO1	2	2 2	2	3	3	3 2	3 2	2	2	3	2	2	2	2
CO3	2	3	3	2	3	2	2	2	2	3	2	2	3	3
CO4	3	3	2	2	2	3	2	2	2	2	2	2	3	2
	ntribution			ige contri	bution-2	. <i>L</i>	ow contrib	ution-1,						
	sted Re	adings	<u>:                                    </u>											
Text- l	Books	1. Clar	k's Radio	ography	- Clark	Text bo	ook of ra	diology	for resid	dents an	d techn	icians-		
		2. S k	bhargav	a Radio	graphic	position	ing- Gai	kal						
Refer Boo		1. Clark	s's Radio	graphy	- Clark/	Text bo	ok of rac	liology	for resid	lents and	d techni	cians-		
Recapi	itulatio	n & Ex	xamina	tion Pa	attern									
_			s Assess											
Comp			7 1 255 651	Mar	ks P	attern								
Terminal Exam			12	1	<ul> <li>11. Contains a descriptive question of 4 marks</li> <li>12. Contains 4 MCQs</li> <li>3. Contains 2 short answer questions. Each question carries 2 marks</li> </ul>									
Attend	Attendance 4													
Project/Assignments 4														

Class participation or any	4	
other		
Class Presentation	4	
Bed Side Behavior or	2	
Interaction in Class		
Total Marks	30	



### Department of Radiology and Imaging Techniques Era University, Lucknow Course Outline Effective From 2023-24

Name of the	B.R.I. T			Year/ Semester:	$3^{ m rd}$				
Program Course Name	English & Communicatio n Skills-II	Course Code:	BRT 304	Type: Semester	Theory				
Credits	0	3		Total Sessions H End Term Exam		40			
Evaluation Spread	Internal Continuous Assessment:	Continuous				70			
Type of Course	C Compulsory	Core		C Creative	C Life Skill				
Course Objectives	<ul><li>Understand thinking</li></ul>	the import	ance of A	nalytical aspect a	nd critic	cal			
	<ul> <li>To inculcate</li> </ul>	the skill o	of literary	work					
	• To know the	basics of	Research	Methodology					
	<ul><li>To develop a</li><li>To le</li></ul>			thinking ant for learning a	s well a	as teaching			
Course Outco	omes (CO): After the s								
Course Outcome (CO)									
CO1	Using communication in their own field and creating new opportunities								
	Enabling students to get digitally smart with communication online tools								
CO3	<ul> <li>Understandi development</li> </ul>	ng the dyn	namics of t	he subject and me	oving to	owards holistic			
Pedagogy	Explanations by the Instructor, Group/Pair Work, Discussion, Assignment,  Practical Presentations								

Internal	Terminal Exam, Attendance, Project/Assignment, Class participation, Class presentation,								
<b>Evaluation</b>	Bedside behavior or Interaction in class.								
Mode									
Session	Торіс	Hours	Mapped						
Details			CO						
Unit 1	Advance Communication –	10	CO1						
	Creative Writing & Critical Thinking		,CO						
	Articles & Memos [Field specific]		2						
	• Journal writing - [field specific journals]								
	Analyze, interpret and effectively summarize								
	a variety of textual content								
	Debate & Group Discussion								
Unit 2		10	CO						
	Professional Communication –		2,C						
			O 3						
	• Role of "Active Emotional Awareness" in								
	Professional Communication								
	• Conference, Seminar, Symposium & Panel								
	Discussion								
	• Self-Awareness – self-image, self-talk & PD								

Unit 3	Analytical Skills - [ Field Specific]  Literature Review  Case Study [basic]  Research Methodology Essentials	10	CO2,CO 3
Unit 4	Different perspective of communication [Field Specific]  • Video creation  • Online platform — Applications, creating licensed contents and ICT [Modern approaches, facilities and tools]  • E- mail writing, blog creation, virtual classroom, digital pronunciation dictionaries, online spoken tutorials, digital libraries, documentaries etc.	10	CO1 ,CO 2,CO3

CO-PO and PSO Mapping

001	oo ro unu roo mupping													
CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6
CO1	2	2	1	2	2	2	2	1	2	3	2	3	2	3
CO2	2	2	3	2	2	3	2	2	3	2	3	2	2	2
CO3	1	2	2	2	3	2	3	3	2	2	2	3	3	2
Strong contribution-3, Average contribution-2,					L	ow contrib	ution-1,							

#### **Recapitulation & Examination Pattern**

Component	Marks	Pattern
Terminal Examination	12	<ul><li>13. Contains a descriptive question of 4 marks</li><li>14. Contains 4 MCQs</li><li>Contains 2 short answer questions. Each question carries 2 marks</li></ul>
Attendance	4	Contains 2 short answer questions. Each question carries 2 marks
Projects/Assignments	4	
Class Participation or any other	4	
Bedside behaviour	02	
Total marks	30	